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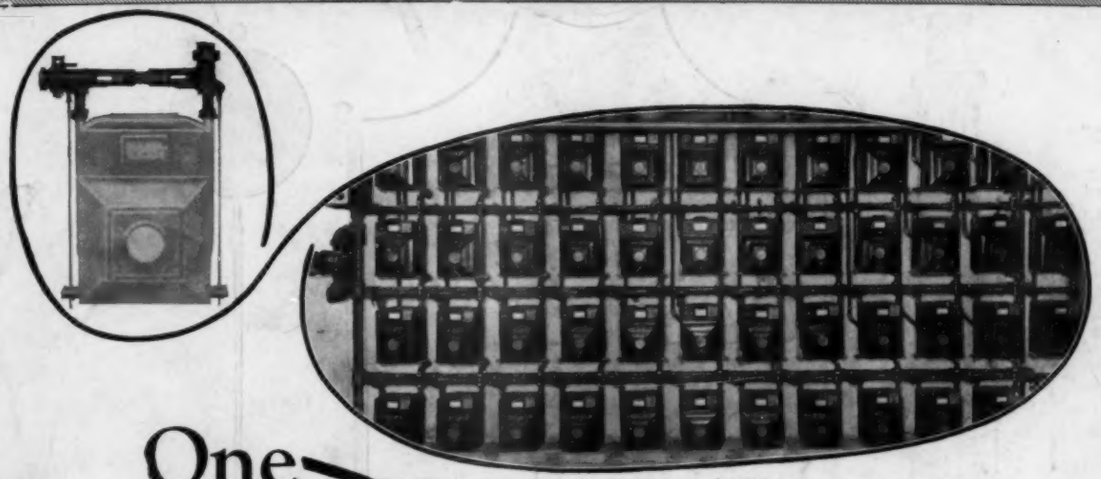

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The "Thorp" Gauge For Testing Pressure and Consumption of Gas.

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Gas works should be provided with a Jet Photometer at the outlet of the station meter to show the candle power of the gas it is making; also in the office at the works where the candle power may be observed as it is sent out.

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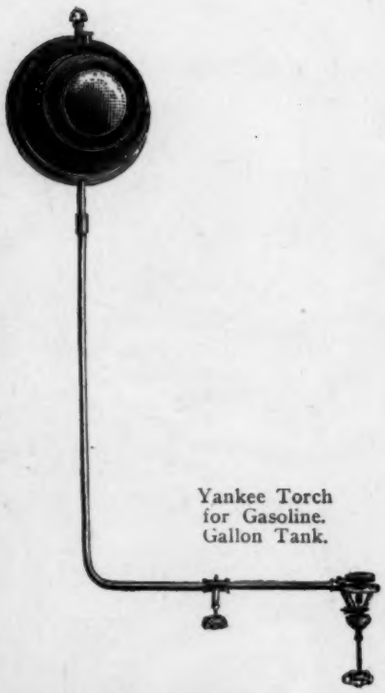

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AMERICAN
GAS JOURNAL

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A Feat in Gas Distribution

A thirty-inch gas siphon under the Chelsea Creek, East Boston, Mass.

D. S. Reynolds

Engineer of Construction, Boston Consolidated Gas Co., Boston, Mass.

THE Boston Consolidated Gas Company recently completed a 30-inch gas siphon under the Chelsea Creek, East Boston. The siphon is made of cast iron pipe and as some rather unusual features were involved in the building and placing of it, a description of it follows.

The 24-inch main supplying East Boston crosses the Chelsea Creek at the Chelsea Street Bridge by means of a 24-inch steel pipe from the shore to the vertical leg of the 30-inch siphon, down 55 feet to the horizontal portion which is 35 feet 6 inches below mean low water, and is 150 feet long between risers, then up about 48 feet to the 24-inch steel pipe connecting to the East Boston shore. The cast iron bell and spigot mains are connected to the ends of the shore spans.

The steel pipe is supported on wooden pile towers driven into the bed of the creek and spaced about 35 feet centers. Each tower consists of four oak piles braced and capped with hard pine lumber, which support steel saddles to which the pipe is rigidly clamped. Expansion and contraction are provided for by means of large flanges flexible enough to take care of the lengthening or shortening of the pipe due to changes in temperature. All joints in the steel pipe are made by bolts with red lead putty and grummets of wicking.

The Siphon Proper

The siphon proper is 30 inches inside diameter and is made of cast iron pipe 1⅛ inches in thickness. This thickness was selected to provide a pipe that would be positively certain to remain sunk, the ordinary weight of gas pipe being able to float if both ends were tightly closed and the pipe filled with gas or air, as well as to provide against corrosion.

An electrically driven deep well pump is provided for pumping the condensation from the siphon and is located in a small house built over the Chelsea end.

The methods used in building the siphon may be of interest.

Building the Siphon

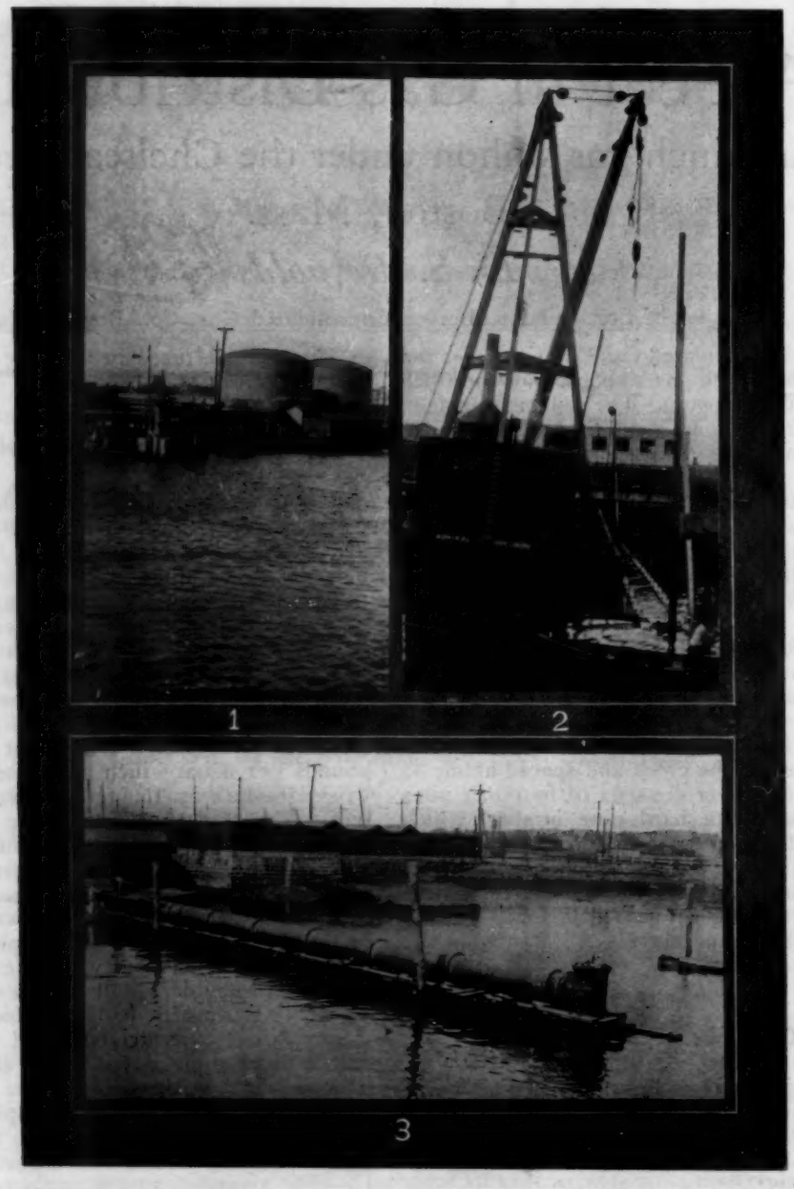
A series of pile bents were driven in a line, off to one side of the channel, and cut off and capped at about low water. On these bents were laid the bottom chord timbers of two trusses. The horizontal portion of the siphon, consisting of 13 lengths of pipe and a drip tee at each end, were then assembled, the joints being made with poured lead and caulked. Since the pipes were submerged at every tide this work could be done only at low water. After all joints had been made, the vertical openings in the drip tees were closed with tight bulkheads, and 20 pounds per square inch air pressure applied to the work, which was 150 feet center to center of drip tees. The test proved the pipe to be tight. The vertical sides and top chords of the trusses were then erected, and the two trusses securely braced together.

In the meantime the dredge was digging a trench of the required depth for the siphon to be placed in position. The material was an extremely hard clay mixed with boulders, and made a very slow and tedious job. Parts of it had to be loosened with explosives. A pile was driven about eight feet into the clay, a diver going down with a stick to which were attached eight sticks of dynamite and the necessary detonators and wires. As the pile was withdrawn the diver kept in touch with it, and so located the hole in the clay into which he lowered the dynamite. He then ascended to the surface, came aboard the lighter, and the charge was exploded by electricity. Even eight sticks of dynamite had surprisingly little effect in the clay.

The lighter was moved over to the truss with the horizontal pipe and hooked on to it at high water, when the pipe and truss were submerged, this greatly

reducing the load. The lighter was warped into position, bearing the truss and pipe to their proper location, when they were lowered into the trench. A diver went down to make sure that the pipe was safely in position on the supporting piles. The two vertical legs were assembled, with poured lead joints, on the deck of the lighter and a diver removed the bulkheads in the tops of the drip tees, allowing the water to fill the pipe. The vertical legs were then lowered so that the spigots entered the bells of the drip tees, when the diver made the joints with lead wool and caulked them with a compressed air driven caulking tool.

The siphon was then pumped out and the two 24-inch steel pipes connected to the vertical risers.



(1) *Chelsea End of Siphon, Showing Vertical Riser, Concrete Anchorage, Electrically Driven Drip Pump and 24" Steel Pipe Leading Ashore.*
(2) *Lighter Floating Truss, With 30" Pipe Inside, to Position Over Dredged Trench.*
(3) *30" Cast-Iron Pipe Assembled and Joints Made Before Sides and Tops of Trusses Were Erected.*

Gas in the Automatic Age

Why labor-saving gas furnaces are necessary

J. E. Bullard

JAMES WATT made the steam engine practical for power purposes at about the time the American colonies won their independence. This may not seem to have any relation to automatic gas furnaces, yet, as a matter of fact, it does have an important bearing, because the development of the steam engine coming at the time it did has had much to do with making the United States a great power consuming country.

The incentive which undoubtedly had much to do with Watt's work on the steam engine was the greater use of power-driven machinery in the manufacture of goods. The factory system was being introduced in the textile industry and water power was not always most satisfactory for driving the machines. For one thing, most water power could not be depended upon to supply sufficient power the year round. At some seasons of the year there would be too much water. At others, there would be too little. Besides, water power sites were not always convenient factory sites. The steam engine made it possible to locate factories on the most suitable sites, insured an adequate supply of power the year round and permitted of unlimited expansion.

New Furnace Must Be an Improvement

When selling gas for industrial purposes, it is well to bear these facts in mind. The manufacturer in conversation with the gas man may not grow wildly enthusiastic over the idea of paying a large sum for a new gas furnace, yet he will never be entirely satisfied with it if the new furnace operates like the old one with the exception that it burns gas rather than some other fuel.

Since the electrical man understands this, and the furnaces he installs are usually designed to reduce labor and make the process more automatic, he is selling furnaces where gas would prove more satisfactory if the gas men had the same realization of the actual need that exists. Any change in fuel that does not make the process more automatic cannot be said to be a satisfactory change, even though the fuel cost may be reduced.

Manufacturers are doing business in an automatic age. That manufacturer who reduces the different processes most successfully to automatic operation is the one who proves most successful. It is automatic production that has done as much, if not more than anything else, to make the Ford Motor Company the hugely successful concern it has become.

Mechanical Advantages Must Be Required

The successful selling of gas for industrial purposes then requires that the salesman first ask himself the question how gas can be used to make the heating process to which it is to be applied an automatic process. If he can answer this question in a satisfactory way, he need not worry about the cost of the equipment or the cost of fuel. It is not at all likely that the size of the investment or the cost of the gas will be enough to play a very big part compared with the very decided advantages of making the process automatic and thus greatly increasing the production, turning out a uniform product and giving the manufacturer more profit.

A thousand dollars invested in automatic equipment is usually a much better investment than a hundred invested in equipment where the fuel used has merely been changed. As a matter of fact, changing from one fuel to another without changing the design of the furnace to make the operation more automatic sometimes actually increases the cost of production.

Five thousand dollars is already invested back of each worker. Therefore, what does a few thousand more amount to when this is divided among a few hundred workmen? The interest on a thousand dollars at 6 per cent is only $60 a year, $5 a month, only a little more than $1 a week. Any engineer who cannot design automatic gas-fired equipment that will not increase production to an extent that will have much more than this in labor costs alone is hardly worth the name of engineer.

Co-operation With the Manufacturer

Prove to the manufacturer it can be done and he will not object to the cost as soon as he is convinced that the equipment is being offered him at a fair price. What he may object to is using his money for experimental purposes. He may not want to spend a large sum on the chance that the equipment will prove satisfactory.

Unless results can be guaranteed, unless the concern manufacturing the gas equipment or the gas company selling the gas has sufficient confidence in the engineer who designed it, to guarantee all that is claimed for it, then the manufacturer can hardly be expected to take seriously the suggestion that it will cut the cost of his production. There is no question about the manufacturer being eager to make his processes more automatic, especially in the heat treatment end. In the machine end he has gone a long way. In the heat treating end he is still relying upon hand methods to a surprising extent. He would like to make his heat treating just as automatic as his machine processes have been made. However, he must be shown before he is going to be convinced that any particular equipment will solve his problem for him.

(Continued on page 294)

GAS MERCHANDISING

Domestic – Industrial

Ideas for the Man Who Sells

William H. Matlack

EXPOSE IT

SOMEONE made a painstaking investigation of woman's reaction to sales appeals with the conclusion that 95 per cent of them are of the visual type. They want to see the merchandise they purchase. Expose your merchandise to sales and expose it in action, if it is at all possible, for if women want to see the merchandise, men want to see it, too, and they want to see it "working."

KNOCKING THE OTHER FELLOW

ONCE upon a time there was a service man who caused the management of his company many a horrible half hour. Whenever this man was sent to service a gas range, he would look it over and if it happened to be a range, sold by some local dealer, he would ask: "Where is that range you want fixed, lady?" and when told that "it is right there in the corner," he would reply: "Why, lady, I can't do anything with that stove; I am a gas man and that's an oil stove."

This would result in a complaint to the dealer, who would, in turn, take the gas company to task for "knocking my line," and he would usually take a rap at the gas company at the next meeting of the "down-trodden" merchants' association.

It don't pay to knock anyone's merchandise and if as much time is taken in learning the good points about the merchandise the company sells as is taken to learn the weak spots in what the other fellow sells, we can soon acquire action that will send our sales over the 50 per cent quota.

WATER—HOT, OF COURSE

THE chart reproduced below is published by a well-known water heater company. This chart should be in the note-book of every gas company salesman who sells hot water service. Here, in a nut-shell, are the direct answers to many questions asked every time a call is made on a water heater prospect.

PM—
—AM
Hot Water demand in the Small Home (10-50 gallons daily) are Limited and Intermittent
TABS show the average time of use and quantity used

Study the chart. The circle represents the 24 hours of the day. The tabs show the average quantity of hot water used at various hours in the small home.

The chart shows these things—and shows them clearly:

A—The modern small home uses hot water in limited quantities.

B—The modern small home uses hot water intermittently.

C—The small home is best served by a small water heater of intermittent operation.(44)

"HERE LIES A MAN"

WE don't dote much on so-called "pep" stuff, and we believe many others have been overfed on it, yet here and there one runs onto some philosophical penwork that is persuasive. Peevish Pete, editor of Pipe Progress, has sent his friends a little card that is worth a half dozen "pep" pills. A MAN is Pete's subject, and here's what he says: "Teach me that sixty minutes make one hour, sixteen ounces one pound and 100 cents one dollar. Help me to so live that I can lie down at night with a clear conscience, without a gun under my pillow, and unhaunted by the faces of those to whom I have brought pain. Grant that I may earn my meal ticket on the square and that in earning it I may do unto others as I would have them do unto me. Deafen me to the jingle of tainted money and to the rustle of unholy skirts. Blind me to the faults of the other fellow, but reveal to me my own. Guide me so that each night, when I look across the table at my wife, I will have nothing to conceal. Keep me young enough to laugh with little children and sympathetic enough to be considerate of old age, and when the day comes of darkened shades and the smell of flowers, the tread of soft footsteps and the crunching of wheels in the yard, make the ceremony short and the epitaph simple—'Here Lies a Man.'"

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 64

Heat and Change of State

MELTING POINT TABLE

Elements.	Degrees F.	Degrees C.
Aluminum	1216	657
Antimony	1154	624
Arsenic	932	...
Barium	1600	...
Bismuth	517	269
Cadmium	610	321
Cerium	1292	...
Chromium	2792	1505
Cobalt	2813	1490
Copper	1892	1083
Germanium	1652	...
Gold	1947	1063
Iodine	240	...
Iridium	3632	...
Iron	2912	1600
Iron cast, gray	2228	...
Iron cast, white	2075	...
Iron, wrought	2900	...
Lead	621	327
Magnesium	1171	633
Manganese	2232	1225
Mercury	minus 39	...
Molybdenum	3992	...
Nickel	2647	1450
Osmium	4892	...
Palladium	2822	...
Phosphorus	112	...
Platinum	3192	1755
Potassium	136	...
Rhodium	3525	...
Rubidium	101	...
Selenium	422	...
Silicon	2372	...
Silver	1651	961
Sodium	205	...
Strontium	1112	...
Sulphur	239	...
Tellurium	851	...
Thallium	561	...
Tin	451	232
Titanium	4532	...
Tungsten	5347	2950
Uranium	4352	...
Zinc	787	419
Zirconium	2372	...
The Permanent Gases in Solid Form		
Hydrogen	minus 432	minus 259
Oxygen	383	230
Nitrogen	347	211
Chlorine	152	102
Inorganic Compounds and Substances		
Ammonia	minus 104	minus 76
Aluminum bronze	1796	...
Alloy (1.5 tin and 1 lead)	334	...
Brass	1869	...
Bronze	1692	...
Calcium chloride	1454	780
Carbon dioxide	minus 71	minus 57
Carbon monoxide	minus 332	minus 203
Ferro-nickel	2260	...
Glass	1500 to 2300	...
Hyponitric acid	16	...
Ice	32	...
Potassium sulphate	1859	...
Saltpeter	600	...
Sodium chloride (common salt)	1510	820
Steel, hard	2570	...
Steel, soft	2687	...
Sulphur dioxide	minus 105	minus 76
Zinc chloride	504	262
Air	minus 314	minus 192
Hydrocarbons in Liquid and Gaseous Fuel		
Ethane	minus 277	minus 174
Ethylene	minus 272	minus 169
Nonane	minus 60	minus 51
Decane	minus 24	minus 31
Organic Compounds and Materials		
Acetic acid	113	...
Almond oil	15	...
Asphaltum	250	...
Beeswax	145	...
Bone fat	70	...
Butter fat	90	...
Carnauba wax	185	...
Coal tar	196	...
Castor oil	5	...
Cocoa butter	90	...
Cocoanut oil	75	...
Cod liver oil	14	...
Cotton seed oil	54	...
Cotton stearin	104	...
Lard	95	...
Linseed oil	60	...
Neatsfoot oil	40	...
Nitro-glycerine	45	...
Olive oil	36	...

Palm oil	104	...	Stearic acid	158	...
Paraffine	130	...	Stearin	120	...
Pitch	91	...	Sunflower oil	1	...
Porpoise oil	3	...	Tallow	92	...
Seal oil	37	...	Turpentine	14	...
Spermaceti	120	...	Wax	150	...
Sperm oil	minus 13	....	Whale oil	28	...
			Wool fat	105	...

The Ash Content of Coal

Its importance from the coke standpoint

Dr. Karl Bunte

(The amount of ash that is present in the coal that is employed in the gas works is a determinative factor in fixing the amount of ash in the coke. It is of course expected that the greater the proportion of ash in the coal, the greater will be the percentage of mineral matter in the coke. As mineral matter is not combustible, the coke that contains more of this ingredient is the less valuable as a fuel. It is understandable that a serious disadvantage may arise when the coal contains too much ash. This disadvantage may be both of an economic as well as a technical character. Dr. Bunte discusses the matter in a very interesting and instructive manner and indicates what the importance is to the gas works of the percentage of ash in coal, a condition which is not given as much attention as it might be. The article is taken from Das Gas und Wasserfach, 1925, pages 82 to 83.—Editor.)

THE author goes into detail to describe the conditions in the gas industry in Germany and the lack of gas coal which made it necessary to use coals for the manufacture of gas which were not absolutely suited for the purpose. The result was that high ash coals had to be used with attendant bad results. It was necessary in certain cases to effect considerable changes in the gas-making processes. This also had the effect of causing considerable trouble on the gas lines and in the gas consuming apparatus. The changes in these conditions are traced in this article through the period of inflation up to at the present time.

Cost of Gas Making

1.	Coal	68.5%
2.	Fuel	13.0%
3.	Wages and salaries	13.5%
4.	Materials used in operations, etc.	7.0%
5.	Repairs, etc	5.0%
6.	Administration expense and taxes	16.0%
7.	Interest and amortization	42.0%
		165.0%
	Credit for by-products	65.0%
	Cost	100.0%

The credit for by-products is made up of coke, 53.5 per cent, and others 11.5 per cent. The price that is obtained for the coke has therefore an important bearing on the cost of the gas. There are three main factors that control the availability and the quality of the coke that is manufactured in the gas works. In the first place there is the consumption of coke in the gas-making process itself, then the percentage of coke breeze mixed with saleable coke, and finally the quality of the coke, which is dependent to a large degree on the percentage of ash that is contained in it.

Effect of Ash in Coke on Its Use for Water Gas Making

The increase in the use of coke in the gas works rests upon the extent to which the water gas process is carried out therein and also on the quality of coal that is available. There is a definite connection between the proportion of ash in the coke and its availability for use in the water gas machine. This is the first matter that must be studied here. If a certain amount of heat will be produced by the combustion of ten grams of pure coke, it is understandable that a greater amount of coke will have to be burned to produce this heat, if the fuel contains incombustible matter, or else the amount of heat that is generated by the ten grams of coke will be less. Accordingly the consumption of raw coke in the generator increases as the purity of the coke decreases, and vice versa. But, in addition thereto, quite a considerable additional loss is entailed by the fact that the clinker from the generator contains as high as 30 per cent of combustible matter. The relation

(Continued on page 298)

As The Journal Views It

ADVERTISING INDUSTRIAL GAS

The gas man has heard much on how well the electric man conducts his business. He has been lectured to, time and time again, to make him see his failings, and to impress upon him that if he wants to get along in the industrial field, he must mend his ways after the fashion set by his electrical brother. It might well be that some gas men feel that these admonitions have been repeated ad nauseam.

While there may be some truth to this, and while gas men and the gas industry may be a bit tired of hearing themselves compared so unfavorably with the electric industry and electric men, it nevertheless remains true that there is a great deal that we, of the gas fraternity, can learn from our electrical friends.

The electrical industry seems to let no opportunity go by for educating people to know all about electricity, what it can do. It takes all steps to bring to their minds that, not only is electricity the premier lighting medium, but, also, the premier heating medium. The progressiveness of our "friendly enemies," as they might be called, is certainly to be admired, and the gas industry can do very well to emulate their example.

Thus, in a recent issue of that world-wide circulated popular fiction weekly, The Saturday Evening Post, there was contained a full page advertisement calling the attention of everybody to the fact that electricity is the industrial fuel. None can compare with it is the plain lesson of this ad. And, in this connection, it must be clearly noted that the advertisement is directed, not to those who actually use electricity for industrial heating purposes, but to the general reading public. It is a distinct effort to educate people in general to look upon electricity as the solution of all heating problems. It aims to build good-will for electricity, to strengthen the morale of the electric heating man.

It might be mentioned here, that the gas industry has a rather difficult task to perform in advertising itself to the community. It has much to do teaching the community in general to regard gas as the universal fuel of industry. It certainly would not expect any assistance from the electrical industry along these lines, and neither should it be expected to give similar assistance. To say the least, it is sometimes surprising to see those that are reputed to serve the industry, actually going out of their way to advertise electricity as an industrial fuel.

However, the fact remains that the sort of advertising that the electrical industry is doing to promote electricity, as an industrial fuel, is bound to have a good effect. It might be said that our electrical friends are starting from the bottom upward and are imbuing in the minds of the people real respect for the product that they sell. This can have no other effect but to lessen any sales resistance that might be inherent in the manufacturer's mind who is being induced to change from the fuel that he is now using to electricity.

Such educational advertising is urged upon the gas industry. Gas has a great story to tell, just as great a one, if not greater, than electricity, and there is no doubt that it can tell it as well and that it can secure as good results from its advertising efforts as electricity. The gas industry should make a definite attempt through national advertising to educate people to come to look upon gas, not only as fuel for cooking and heating, but also as the one and only solution of the industrial heating problem.

LIFE INSURANCE COMPANIES FIND UTILITY SECURITIES MOST PROFITABLE INVESTMENT

Bonds of public service companies held by 41 of the leading life insurance companies of the country have increased in value by more than $100,000,000 since November, 1923.

According to an official report just made public by the Association of Life Insurance Presidents, public utility bonds were the only single class of securities held which increased over 1922, both actually, in dollar value, and relatively, on a percentage basis, compared to total assets.

A pronounced trend towards increased investment in these securities has been one of the marked char-

acteristics in the handling of life insurance funds during recent years. This is shown by the census reports for the first 11 months of 1924.

Life insurance companies, in the main, have shown an increasing appreciation of public utility bond values and comparatively high return in the past few years, and in many cases a substantial part of their yearly investments has been diverted into this class of securities. In round figures, $405,000,000 of public utility securities were held by 41 life insurance companies reporting 82 per cent of all admitted assets of the life insurance companies of the country. Holdings of all life insurance companies can be safely estimated at between $465,000,000 and $470,000,000 of public utility bonds.

Building Good Will by the Salesmen

What public relations means to the commercial man

H. T. Sands

WE have heard a great deal about public relations. So much has been said about it that we have sometimes become lost in the maze of words, and some of our own associates in the public utility industry have concluded that we had suddenly stumbled on to something new. But public relations, as such, is nothing new. What we have done in the prosecution of our public relations is to stress the means, rather than the end. We have learned, and still are learning, that if we are going to win from the public that measure of its confidence and trust which is our rightful due, and without which we never can have sound public relations, we must see to it that the public receives at first-hand such information regarding our industry as will enable it to intelligently accord that approval and trust.

It is not enough that we serve the public with good service at adequate rates, courteously rendered. The public never will appreciate that service until it realizes what we are doing to make possible the service which it receives. It has been said, "The public utilities must not only give good service; they must convince the public that it is getting good service."

The Handicap of the Utility Business

This business in which we are engaged labors under a peculiar handicap, a handicap that is the result of well doing, a handicap that increases with the quality of the service we render. What I mean is this: How many of our customers do you think there are who, when they press the button and light their rooms, scratch a match and light their gas ranges, think for one moment of the army of men and women and the investment of capital that have made this possible; and they reason they do not think of it is, first, because we have so quietly and effectively met their service needs, and, secondly—and what to my mind is much more important—because we never have taken the pains to tell them about it.

We are engaged in a business that is fundamentally different from the ordinary private enterprise, and the public will never know these fundamental differences until we tell them; but, before we attempt to tell them, we must be sure that we understand them ourselves. I want to enumerate just a few of these fundamental differences which the public, generally, does not apprehend.

The Question of Profit

First, the question of profit. In the ordinary private business there is no limit to the amount of money which can be made, except those limits that are imposed by business conditions and the caliber and ability of the brains behind the enterprise. The more money a private business makes, the more we admire that business. We hail Henry Ford as a financial wizard because of the vast fortune that he has amassed in a short time, but the public does not know that in the public utility business there is no such thing as profit as the ordinary merchant or manufacturer understands profit; that, under public regulation, all that we are allowed to earn is a fair return on the fair value of the property devoted to the public service. What this fair return is, is measured very largely by the price which the utility has to pay for money in the open money market.

We have a monopoly of service, not as a special favor to the industry, but as an economic necessity; but we have no monopoly of the money market, and when a public utility needs new money—and every utility that is alive is constantly needing new money it must go into the money market and compete with all other forms of investment; and unless it can show the ability to pay a return which will compare favorably with other forms of investment, it is not going to get the money.

The Fair Return

But this is not all that constitutes a fair return. Every utility has a large investment in physical property. This is property of a different character from the stock in trade of the merchant or the manufacturer, which can be turned over in a short time. This property is property that is used to give serv-

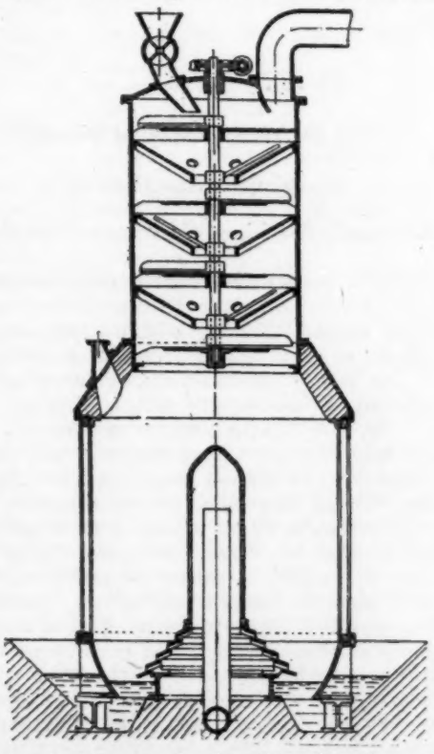
(Continued on page 299)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

GASIFICATION OF COKE BREEZE

THIS invention relates to the gasification of coke breeze, or it may be dust from coke screenings. The carrying-out of the invention involves the use of parts some of which are, in themselves, known, but which are combined and the breeze subjected to treatment therein in a particular manner—that is to say, a preheating drying and distributing retort is used above a water jacketed producer having a suitable water lute or bottom, and under certain conditions of temperatures and pressures.

The retort is arranged so that the material fed



into the retort is evenly distributed and opened out by movable members or ploughs, thus facilitating the passage of the hot gases from the producer through the material. The blast pipe for the producer is situated within a central dome device above the grate. The sides of the producer are unlined and provided with water jackets for cooling purposes and for generating steam, which latter may be supplied to the dome, whereby the blast may be saturated, or the steam may be used for driving auxiliary machinery. Atomized water jets may, alternatively, be injected into the blast pipe for saturating the blast.

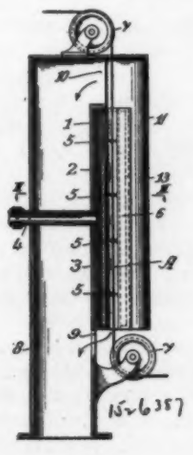
One form of grate and water lute is clearly shown in the drawing.

It is arranged that the temperature of the upper part of the producer and the adjacent lower part of the retort interior is about 350 to 450 degrees C., but 400 to 450 degrees C. preferably, which temperature is allowed to increase to a maximum of approximately 1,000 degrees C. at the hottest zone in the producer. The tendency of the temperature to rise above a desired extent is prevented or controlled by radiation of heat from the particles of breeze to the water jacket. The saturation temperature of the blast should be approximately 68 to 70 degrees C.; and the blast pressure approximately 4 in. to 6 in. of water, although the depth of the fuel bed in the producer determines the actual blast pressure required.

TAR DISTILLATION BY LEAD BATH PROCESS

THE distillation of tar by the lead bath process was recently discussed in a meeting of the London section of the Society of Chemical Industry. It is claimed that this process possesses many advantages both to large and small gas works. The equipment is very compact and is run with very little labor. The principle on which the still is operated is the rapid transference of heat through the still bottom to the tar through a bed of lead. This enables very large throughputs to be obtained from a small still. The mixture of tar that is being distilled is only one-half inch thick and it takes four minutes for the tar to pass through the still.

One particular advantage in the use of lead is the prevention of formation of carbon particles on the still bottom and, furthermore, the tar is dehydrated so cleanly that priming does not occur.



GAS SINGER

THE illustration shows a tubular gas burner which comprises a flame chamber through which the thread is drawn. This gas-fired singer is patented in United States Patent No. 1,526,387.

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GAS IN THE AUTOMATIC AGE

(Continued from page 287)

Automatic Machines Command High Prices

Users of automatic machinery pay prices for them which not only cover the cost of manufacturing these machines, but also the cost of the experimenting and the research work that had to be done to perfect them. As a rule, automatic machinery is not sold to users until it has been thoroughly tested out in the plant of the concern making the machinery.

This has not always been the case with automatic gas furnaces. It should be. They should be sold at a price high enough to cover all costs. If they are well designed, if they have been tested out and all defects possible discovered and corrected before they are placed on the floor of the user, they are worth all that is charged for them.

Heat treating is a long way behind most other processes of manufacture. It is soon going to be brought up to the standard of the other processes. The heating source is going to be either gas or electricity. It all depends upon the relative progress made with the two types of furnaces in the direction of making the processes automatic. The cost of the heat is really of minor importance. The design of the equipment, the service it gives in operation, is the determining factor. Within a comparatively few years a great many heat treating processes which today have not been changed to any great degree during the past hundred years are going to be made entirely automatic. It can be done and it will be done. It can be done just as well with gas as with electricity, but it depends upon whether gas companies or electric companies offer the best market for the completed machines which source of heat will be used.

Catechism of Central Station Gas Engineering in the United States

Installment No. 64

(Continued from last week)

To prevent loss of heat by radiation the whole of the body of the calorimeter above a point an inch or two below the bottom of the upper compartment is jacketed by a highly polished nickel-plated copper cylinder made sufficiently large to leave an annular air space one-half inch wide between it and the calorimeter.

When set up, the apparatus stands on three removable legs provided with levelling screws. References to the accompanying sections of the calorimeter will, in connection with the above description, enable the construction of the apparatus to be fully understood.

Two measuring glasses are provided with the calorimeter. The larger one will hold two litres and is graduated in intervals of five cubic centimeters. The other is an ordinary 100 cubic centimeter glass, graduated to one-half of a centimeter. (A litre is 1,000 cubic centimeters and a litre of water weighs one kilogram.)

Determining the Calorific Power of Gas

When it is desired to make a determination of the calorific value of a gas, the apparatus is set up on a firm base in such a position that it can be readily supplied with the gas to be tested and with flowing water. The thermometers provided for the purpose, which are graduated in tenths of degrees Centigrade from 0 degree to 50 degrees, should be inserted in the proper openings, as described above. Connection is then made to the water supply by means of rubber tubing slipped over the nipple on the bottom of the smaller inside cup, of the two supported by the pipe which enters the calorimeter at the bottom of the upper compartment. A rubber tube leading to a drain is slipped over the nipple opening from the larger cup in the space outside the small one, and another tube is slipped on the nipple leading from the funnel in the cup supported by the pipe coming out of the tube at the top of the conical hood. Water being turned on flows into the small cup and thence down through the pipe around the U bend, up through the stop cock, around the bulb of the thermometer inserted into the tee and into the annular space around the tubes. It rises through this space and passes up the central tube, in which it is thoroughly mixed by the baffle rings, over the bulb of the thermometer inserted into the tee at the top of the tube and thence by the side pipe to the cup in which it rises until it overflows into the funnel and passes away by a rubber tube slipped over the funnel nipple. By admitting water into the small cup at a faster rate than that at which it is admitted to the calorimeter, this cup is filled and water overflows from it into the larger cup, from which it runs off through the nipple and tube to the drain. In this way a constant head for the supply of water is maintained, and as the water also overflows into the funnel on the outlet at a constant height, the effective head is constant and the water must flow through at a constant speed as long as the stop cock remains set at any given opening.

Gas Is Metered

The gas to be consumed is led to the apparatus through an experimental meter, by which it is measured, and a sensitive governor, by which the pressure, and consequently the rate of flow for any given opening of the stop cock, is kept constant. For illuminating gas a bunsen burner is used and the gas is burned at the rate of five to six cubic feet per hour. After being lighted the burner is placed inside the inner cylinder and clamped to the rod provided for this purpose. The clamp arm is of such a length and the rod is so flattened that when the set screw is tightened the axis of the burner coincides with the axis of the calorimeter, and it is fastened at a height that brings the bottom of the flame five to six inches above the lower edge of the apparatus.

The products of combustion rise inside the inner cylinder until they strike the inner hood and then pass down through the tubes to the lower annular compartment and out through the outlet flue to the air. In the passage up the inside of the cylinder and through the tubes they impart their heat to the water surrounding the tubes and emerge from the apparatus at a temperature either exactly or very nearly that of the entering water, which should be the same as that of the air. Any water vapor formed by the combustion of the gas is condensed and runs off through the small pipe tapped into the ring closing the bottom of the lower annular compartment.

Making the Test

To make a test, water is started flowing through the apparatus, and the gas burner lighted and put in place and the flow of gas adjusted to the proper rate. The flow of water is then adjusted by the graduated stop cock to a rate that will give the desired difference in temperature between the outgoing and incoming water. This difference is usually kept between 10 degrees and 20 degrees C. When the temperature of the outgoing water, as shown by

the thermometer at the top of the calorimeter, is at the desired point and remains constant, and the condensed water has begun to drop from the tube at the bottom, a test can be made. The hand of the meter must be watched, and as it passes the zero mark the end of the tube through which the heated water is flowing must be inserted in the large graduated measure and the small measure placed under the condensed water outlet. Four or five observations of the temperature of the water as it enters and leaves the apparatus must be made and recorded at regular intervals. When the meter hand crosses the zero mark after making either one or two revolutions, depending on the rate at which the water is flowing, the hot water tube must be removed from the measure and the water allowed to run to waste again. The observed temperatures are then averaged and the difference between the outlet and inlet temperature obtained. The amount of water collected in the measuring glass is read off in cubic centimeters by means of the scale marked on the glass, and this amount reduced to litres and decimals of litres by dividing by 1,000 or pointing off three decimal places. Since a Calorie is the quantity of heat required to raise the temperature of one kilogram of water 1 degree C. and a litre of water weighs one kilogram, the product obtained by multiplying the amount of water collected, measured in litres, by the number of Centigrade degrees by which its temperature is raised, is the number of Calories absorbed by the water and consequently the number produced by the combustion of the measured quantity of gas. This number can be changed to British thermal units by multiplying it by 3.968, one Calorie being equal to that number of British thermal units, and from this figure and the quantity of gas used the calorific value of the gas in British thermal units per cubic foot can be readily found.

The Calorific Power Obtained from the Water

The result so obtained is the calorific value of the gas, the water formed having been condensed in the calorimeter, and it is to enable the amount of heat available with the water in the state of vapor to be determined that this condensed water is collected and measured. The amount can be measured for such test, but since the quantity is comparatively so small that the unavoidable error in reading amounts to a large percentage, it is best to allow one cubic foot of gas to be burned and use the amount of condensed water collected during the combustion of this quantity of gas as an average to be employed for each of the different tests made at that particular time. Having the amount of condensed water, the latent heat of the steam corresponding to it can be calculated and deducted from the calorific value to obtain for the gas under test the amount of heat available with the water in the state of vapor. A convenient rule is that for every cubic centimeter of water so condensed per cubic foot of gas burned, a deduction of 0.6 Calorie, or 2.382 British thermal units, must be made from the calorific value per cubic foot to obtain the amount of heat available with the water in the state of vapor.

The above description of the instrument, and of its use in making a test, is based upon the form in which the Junkers Calorimeter has usually been sold and used in the United States. However, since the calorific value of a gas is expressed in this country in terms of British thermal units per cubic foot, it is desirable that the instrument should be so equipped as to enable the result of a test to be calculated directly in such terms. For this purpose the meter should be made to pass 0.1 cubic foot per revolution of the drum, the thermometers should be graduated in Fahrenheit degrees and show accurately 0.1 degree, and the water heated during the test should be weighed on scales graduated to 0.01 lb. instead of being measured according to the metric system.

When it is necessary that the results obtained should be exact, the temperature of the gas and those of the inlet water, the escaping products of combustion and the air of the room should all be the same. For ordinary commercial work it is sufficient that these temperatures should be within say five degrees.

The subject of calorimeters and their use for determining the calorific value of gas is exhaustively treated in the report of a Committee on Calorimetry made to the American Gas Institute at the meeting in 1908 and published in Vol. III. of the Proceedings, page 285.

Example in Calorimetry

320. A calorimeter test made on a certain illuminating gas gave the following data: Gas consumed, 0.1 cubic foot; average temperature of water entering the calorimeter, 16.67 degrees C.; average temperature of water leaving the calorimeter, 25.23 degrees C.; average temperature of escaping products of combustion, 17.05 degrees C.; quantity of water collected, 27 c. c. per cubic foot of gas consumed; temperature of gas at meter, 63 degrees F.; height of barometer, 29.33 in. Calculate both the calorific value of the gas and the amount of heat available with the water in a state of vapor at a temperature of 212 degrees F.

Ans. Since, as stated in the answer to question No. 319, a litre (1000 c. c.) of water weighs 1 kilogram, and the amount of heat required to raise the temperature of 1 kilogram of water 1 degree centigrade is a Calorie, the product obtained by multiplying the amount of water collected, measured in litres, by the number of centigrade degrees by which its temperature is raised, is the number of Calories absorbed by the water, and, consequently, the number produced by the combustion of the measured quantity of gas.

In the particular experiment noted the water enters at a temperature of 16.67 degrees C. and leaves at one of 25.23 degrees C. The temperature is therefore raised 8.56 degrees C. The volume of wa-

(Sixty-fifth Installment Next Week)

1925 Program of Sales Stimulation

Details of a comprehensive campaign for increased gas sales

The 1925 program of the National Sales Plan has been approved by the executive board of the American Gas Association. This is the first step in the nation-wide campaign to increase the sales of gas and gas appliances in the United States and Canada by 50 per cent in three years.

The entire plan has been laid out on the basis of a study of the most successful sales ideas and practices of the gas industry, plus the introduction of tried and sound merchandising methods or other industries.

The Primary Aim

The fundamental aim of the three-year program is to help build up the sales activities of local gas and appliance companies, to co-ordinate these efforts into a nationally operating campaign, and then to back up the entire local and regional program with strong national publicity and advertising. Only when the individual companies are thus functioning in step with each other can the full value of national advertising be secured by those sharing in the campaign.

The First Stage

Every step of the program is pointed toward the ultimate goal, but necessarily the first stage is one of proper organization, local instruction and assistance and sales stimulation. The 1925 efforts are directed toward these ends.

The sales effort for the next year is largely built around the Monthly Sales Stimulation Service which will supply month-by-month material for the successful operation of all domestic sales activities of participating companies.

As a result of experience during the past year the Sales Stimulation Committee will greatly enlarge and extend the scope of this service and to make it of more practical help to the gas company sales forces without increasing the price of the service.

The organization to administer this program will consist of the Commercial Section as the National directing body, and Regional Councils made up largely of the executives of State and Regional affiliated associations.

The plan also includes the holding of at least three regional sales conferences in different sections of the country similar to that held at Millbrook in 1924, for the purpose of assisting the local companies to put the program into practical operation.

The Sales Stimulation Service

During the past year the aim of the Monthly Sales Stimulation Service has been to build up an understanding of the fundamentals of sales management and selling practices. Basic principles of gas sales were purposely dwelt upon in order to lay the background for the more practical work ahead.

This year the entire Sales Stimulation Service is centered around the practical operation of sales departments. Definite, usable plans in complete detail will be provided, which will exemplify and apply the principles previously covered. Every detail of the 24 sales programs will be treated and there will be help for everyone engaged in the sales work.

The Handbook for Salesmen

Almost every sales representative of a gas company has felt the need of a comprehensive, practical data book which will provide him with the technical data, sales information, appliance descriptions and other essential facts which are required in his daily work. Some companies have made up partial data books of this kind.

With the broad facilities at the command of the A. G. A., such a data book can be more completely prepared than has ever heretofore been issued. The work of compilation is now under way and it is certain that the finished Handbook will be a reference book of the most practical use to every sales executive and sales representative of gas companies.

Regional Sales Meetings

To carry still further the efforts to develop locally intensified selling work, the A. G. A., through its Regional Councils, will hold a series of sales conferences or meetings during the spring and summer for the education of sales executives and for discussions of sales policies and methods to be given by leading figures in gas and other selling work.

PASTEURIZING MILK AT HOME BY GAS

If you cannot obtain pasteurized milk and if you are doubtful about the purity of the raw milk, you may pasteurize it at home on the gas range by the following easy methods:

Take a pail deep enough to allow water placed in it to reach the neck of a quart milk bottle. Place an inverted saucer in the bottom of the pail and set the bottle of milk on the saucer. Pour water into the pail up to the top level of the milk in the bottle. Put the pail containing the bottle and the water on the range and leave it there until the water boils. Then turn off the gas, remove the pail and let it stand, covered, for half an hour. Remove the bottle of milk and cool it quickly by letting cold water run over it. As soon as the milk is cool, place the bottle close to the ice in the refrigerator and keep it there until it is to be used.

Boiling the milk for three minutes will also make it safe for infant feeding.

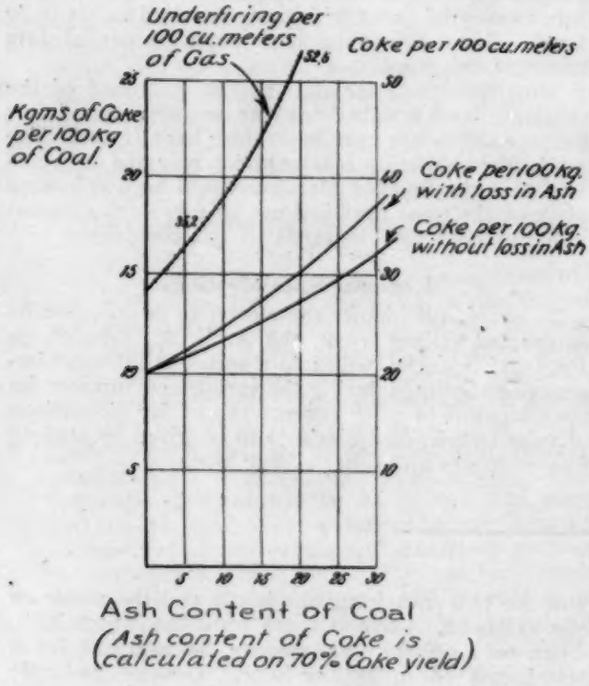
THE ASH CONTENT OF COKE

(Continued from page 290)

between the consumption of coke and the percentage of ash that is contained in it is seen graphically in figure 1. In one case the loss in the clinker is taken into consideration and in the other case it is not. The results show that the consumption of coke in the generator increases from 11.6 kilograms of coke per 100 kilograms of coal at an ash content of 7.5 per cent to a 15 per cent consumption with an ash content of 20 per cent. This applies to common practice and the same conditions hold good for the production of water gas and the operation of boiler plants.

Consumption of Coal for Gas Making

The interesting figure, however, as far as the gas company is concerned, is the consumption of coal that is required per hundred meters of gas produced in the water gas generator. If one kind of coal, used in the manufacture of gas and containing 7½ per cent ash, yields 33 cubic meters of gas, then the coal that contains 20 per cent of ash will yield 28.5 cubic meters of gas.



The consumption of fuel for underfiring then rises from $\frac{100 \times 11.6}{33}$ to $\frac{100 \times 15}{28.5}$, that is, from 35.2 kilograms to 52.6 kilograms per hundred cubic meters of gas. This relationship is shown graphically in the top curve of figure 1. Thus it is seen that the ash content of the coal alone, when considering coals of similar origin, possesses a proportionally greater influence on the consumption of coal than what corresponds to the decrease in the content of pure carbon in the fuel.

The Effect of Other Factors

In addition thereto there are the difficulties which arise from the fact that the quality of the coal is poorer. Reduced capacity for coking in the coal give a coke that is easily friable. This kind of coke falls to pieces in the generator, with the result that the loss of combustible matter in the ash is increased. This is a natural outcome of the operation of the generator with this kind of coke. But a result of even greater significance is the increased resistance to the passage of gas through the beds of fuel in the generator. An example is known of one gas works that worked with such high ash coke that the plant had to close down.

Another important effect of high ash in coal on the coke that is produced therefrom is a reduced selling price, due to the large amount of small pieces of coke that are intermixed with it. It is a fact that fine coke has only one-third of the price of coarse coke. Then, again, the coke that is employed in the operation of the water gas generators must be screened so as to remove all the fine particles from it, and in many installations it is also necessary to do the same thing in preparing the coke for use in firing chamber plants and retort benches.

The natural result is that when the fines are screened out of the coke that is used in the plant itself, if there is a large proportion of fines present in the coke as it is made, the remainder of the coke which is ready for sale will contain a very large percentage of these fine materials, with the result that the selling price of the fuel is correspondingly reduced.

Thus it is seen that the quality of the coal, as far as ash is concerned, as well as its other important properties, has a great influence on the quality and saleability of the coke that is made from it. (The author in the original article carries out a number of calculations on a price basis to show what this effect is. These calculations and determinations are based on marks and are not applicable to American conditions.—Trans.)

A remedy is sought for the trouble. This lies in a modification of the specifications on coal so that the sellers of the coal will be obliged to furnish coal containing a certain maximum ash content. It recommended that some basis of guaranteeing the ash content of coal used in the gas works for the manufacture of gas be worked out.

BUILDING GOOD WILL BY THE SALESMEN

(Continued from page 292)

ice, and not for the purpose of sale. From the moment the property is installed it begins to wear out, to depreciate, and this wearing away of the physical property used in giving the service that we render is just as much a part of the cost of this service as the fuel put under the boilers or the wages paid to employees.

So you see, in order to secure a fair return, we must be allowed to charge such rates as will enable us to pay our expenses, set aside reasonable amounts for depreciation and contingencies, and then pay to the investor who puts his money into the enterprise such wages for the money as will induce him to put his money into our business, rather than put it somewhere else.

A Fair Target for the Demagogue

Public service corporations have always been a favorite target for the radical and demagogue. One of their favorite subjects is about the valuable franchises which the municipalities have given away to the public utilities. A franchise is nothing more nor less than a permit to spend money; but the utility spends money in creating an investment which is fixed and permanent, which the municipalities can tax year in and year out, and the creation of that investment and the service which follows it attracts to the municipalities manufacturing and other business, which would not come there if these municipalities did not have a good public service. So you see that rather than giving anything away, a municipality makes a most excellent trade for itself when it grants a franchise to a public service corporation.

Another favorite harangue of the radical and demagogue is that these soulless corporations are gouging the public by charging rates which will enable them to pay dividends on watered stock. Under public regulation, we are allowed to issue stocks or bonds only to the amount of real property which we have. In some states there may be watered stock, but that has nothing to do with the fixing of the rates which we charge, because no court or commission in fixing the rates which a public utility may charge for its service gives any consideration to the financial structure of the company. The only thing considered is a fair value of the property, and what are the rates necessary to insure a fair return upon that fair value.

Public Relations and the Salesmen

Now I imagine some of you here think that the developing of public relations is a matter for the executive and is no concern of the commercial department. I believe there is no part of our business which affords a greater opportunity for the building of right public relations than the commercial department. Our obligation to our customers does not end when we have delivered gas or electricity of the proper pressure and quality. Not only must we make such delivery, but we must see to it that our customers are acquainted with every possible way in which that service can be used to advantage. Every appliance that is sold with a view solely to making the sale is not a transaction which builds right public relations, but every appliance sold with a view to placing in the hands of the customer an article which will render a real service and prove of real worth to him is one of the best possible means for building good public relations.

You men and women here are coming directly in contact with the public. In very many cases, to the customer you will be the company, and the company will be judged by the attitude which you take toward your customer. What we are striving for in our public relations work is a larger measure and a better understanding between the public and ourselves. That public intends to be fair, but how in the world can the public be fair unless it can act intelligently; and how can it act intelligently unless it is in possession of the facts; and to whom else should it look for the facts but to us? We have a wonderful story to tell; a story that we all should be proud to tell; and I know of no branch of our business where the opportunity for telling the story, not merely in words, but in the spirit of real service, is greater than in the commercial department.

BARBER'S TREATMENT FOR WICKER FURNITURE

Modern wicker furniture gets practically the same treatment as the man who sits in the barber's chair and asks for a shave, massage, hot towel and singe. The only difference is that the wicker furniture comes out of the treatment with graceful lines and highly colored paint, whereas the average mortal looks wan and feels considerably poorer.

Gas-fired boilers have done more to make reed and wicker furniture popular than any other one thing. Gas heats the water in which the dowels, or round pieces of rattan, ash, birch or other wood, are soaked to make them flexible. The reed pieces are then gone over with a gas torch, which singes off the fuzz, and the next operation is to place them in high pressure steaming ovens, gas heated, where the dowels are rendered so flexible that they can be twisted and wound in any shape desired.

The use of gas not only increases the speed of production, but reduces breakage to a minimum and entirely eliminates cracking or warping in the finished product, as the high steam pressure forces the moisture on the outside of the dowels into the cells of the wood and thus renders it extremely flexible.

Wicker furniture manufacturers say that the introduction of gas fuel in the singeing and steaming operations has enabled them to keep pace with an enormous public demand for their product.

A Communication Regarding Water Gas

From L. P. Lowe

Editor American Gas Journal,
53 Park Place,
New York, N. Y.

Dear Sir:

Visualize a man who, for the purpose of demonstrating his theory as to air currents, started alone on a free balloon trip from Cincinnati, landing several hours later on the Atlantic Coast.

Visualize this same man later constructing a balloon in which he intended to cross the Atlantic Ocean alone.

Visualize this same man as later becoming the aeronaut of the Army of the Potomac during the War of the Rebellion, in connection with which service he did not hesitate to freely invade enemy territory.

Visualize also this same man inventing and developing apparatus for the production of artificial ice, in connection with which he freely handled "Snowballs" of solidified carbon dioxide. Some cold!

Such a man would naturally be a fearless one and know what he was about, hence would not be apt to protect himself behind a stone wall through which loop-holes were placed for the purpose of operating valves in making gas. It is, therefore, with somewhat amused interest that I note on page 72 of that interesting publication, "The Romance of the Gas Industry," the following quotation having to do with the first water gas set of my father, the late Professor T. S. C. Lowe:

> "Everyone was afraid the apparatus would explode, and to protect the operator the valves were placed behind a stone wall. Peep holes were made in the wall so that those present could watch the set. Everyone was surprised when there was no explosion."

The above is wholly erroneous and ridiculous in the extreme, I being able to attest thereto of my own knowledge, for the reason that I was present at the starting up of father's first water gas set at Phoenixville, and, perchance, I am the only person now alive who was.

It is true that certain fearsome individuals were present when that set was put into operation, but father was not of the number, and it was he who, with his own hands, started the set and put it into operation. Nor was the set, save for the crudities of such a first installation, any different than sets of the present day, by which I mean that there were no special protective walls or other devices whatsoever, it having been merely a plain, ordinary, common sense gas-making installation of that period.

Perchance the above may be of interest to your readers.

Sincerely,

L. P. LOWE.

Gas Men Discuss Important Problems

Excerpts from papers read at Wisconsin meeting

INCREASING demands for manufactured gas in homes and industries, together with extensions of gas mains into suburban sections, will compel gas companies in Wisconsin to spend approximately $5,000,000 this year, according to J. G. Felton, LaCrosse, chairman of the Gas Section of the Wisconsin Utilities Association.

"This sum will have to be spent to keep up with the growth of the population of the various cities, and to keep pace with the demands from industries which are turning more and more to the use of gas in manufacturing processes requiring heat," said Mr. Felton.

"A large share of this money will be used in laying gas mains and customer service pipes. Companies estimate that approximately 104 miles of pipe will be laid during 1925.

Gas Industry Facing Great Future

"The gas industry is not only in the dawn of its greatest expansion, but is also facing its greatest era of usefulness. Our number of customers in Wisconsin has increased from 125,826 in 1910 to approximately 256,000, and the individual consumption of gas has increased 50 per cent. Gas companies in 1924 sold more than 110 per cent more gas than in 1910.

"Improvements in gas ranges, introduction of gas-fired water heaters, auxiliary room heaters, and the many new uses of gas for industrial heating operations, are some of the reasons for the increase in gas consumption. Today, about 85 per cent of the gas sold is used for cooking and heating appliances and only 15 per cent for illumination, whereas 20 years ago these percentages were just the reverse.

Gas Conserving Natural Resources

"While gas service is providing the most efficient fuel on the market, it is also conserving our natural resources. When a gas company uses a ton of coal it does not burn it and waste the many valuable commercial products that are locked up in it, as does the householder. The gas company bakes the coal. In addition to extracting about 10,000 cubic feet of gas, it also gets from a ton of coal 22 pounds of ammonia, two and one-half gallons of benzoil and nine gallons of coal tar. Among the commercial products saved when a gas company bakes coal are medicines, explosives, fertilizer, dyestuffs, perfumes, photographic developers, paints, rubber substitutes, tanning material, flavoring extracts, disinfectants, printing inks, motor fuels, soap, brake linings, linoleums and hundreds of other by-products.

Home Service

"During the past year most of the gas companies have extended the work of their Home Service bureaus. They have conducted cooking classes and given personal instruction in the home relating to the more efficient use of gas appliances. In an astonishing number of cases, gas companies have found through these Home Service bureaus that housewives do not use their ranges to the best advantage, because they have never been taught the most elementary principles of cooking. Cooking classes are held in gas company owned buildings, but, in addition, employees of the Home Service bureau are sent to homes where their services are requested.

"Experience has shown that a satisfied customer makes more use of his appliance and tends to discover new ways of using gas for heating requirements. Gas companies, therefore, are just as much interested as the customer in making gas service as efficient and economical as possible. Through their Home Service departments, gas companies are bringing the housewife back to the pies and roasts that mother used to make and restoring the entire family to the family dining table."

Experiments carefully conducted at Stevens Point, using kerosene, wood, coal, electricity and gas, gave us the following cost figures for nine meals:

Kerosene	$ .33
Wood	.55
Gas	.58
Coal	.99
Electricity	1.26

The gas we used is sold at $2 a thousand cubic feet; electricity at 4 cents a kilowatt hour, and wood, kerosene and coal at the then prevailing prices at Stevens Point.

Much gas is wasted in many homes because the housewife uses the largest burner on a range when a smaller one would do. She does not clean the burners often enough. She allows water and foods to boil furiously instead of turning down the flame.

Often burners are not adjusted properly to produce the proper mixture of gas and air and in many homes obsolete and worn-out gas ranges are still in use.

Housewives should expect their gas company to provide them with uniform pressure at the ranges, offer them advice in regard to the purchase of stoves, make suggestions looking toward the efficient use of gas and offer instruction on the best operation of a range.

In most cities the gas company is ready and willing to give the housewife more service than she demands. Many companies invite her to worthwhile cooking demonstrations.

Women also should expect their husbands to provide them with modern gas appliances just as they furnish their offices with modern equipment.

ENCOURAGING GAS SAVING

John H. Hartog

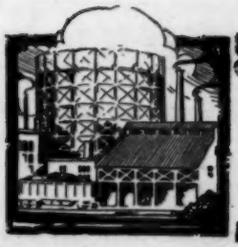
The accompanying display, which was in the window of the Portland Gas & Coke Company, Portland, Oregon, shows a tie-up with the insulation of homes in order to make house heating by gas still more reasonable and satisfactory.

An enlarged photograph of a city scene stands at the left-hand corner, showing several houses after the only snow which Portland had, namely, during a couple of days in the middle of December. An enlarged cut-out reproduces the scene and is put in the shadow box with lights inside reflecting upon

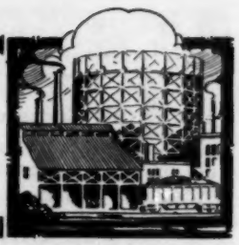
the snow, while the signing above it reading "Why Snow on One Roof Only?" with a big red question mark under it, has a spotlight aimed on it so that it is very conspicuous, even from a distance.

One of the houses has the entire roof covered with snow and this is the house that is properly insulated, using "Cabot's Quilt" against the rafters. The roofs of the other houses show snow only on the eaves, the remainder of the roof in each case showing bare on account of the heat melting the snow.

The insulating material people reported several inquiries and tied up their advertising with the show window.



NEWS OF THE GAS INDUSTRY



Gas Men Well Represented in Program of Convention of Advertising Men

The directors and officers of the Public Utilities Advertising Association, meeting at New York February 4, formulated tentative plans for the association's activities at the annual convention of the Associated Advertising Clubs of the World, at Houston, Texas, next May. An exhibit of public utilities advertising will be open for the members and visiting public, to emphasize the importance, as well as excellence, of the utility advertising thought of today.

The program agreed upon is as follows:

(First Session)

President's address — W. H. Hodge, Byllesby Engineering and Management Corporation, Chicago.

"Costs and Results"—E. Paul Young, Illinois Power & Light Corporation, Chicago.

(General discussion.)

"Better Copy"—I. M. Tuteur, vice-president, McJunkin Advertising Company, Chicago.

(Discussion led by LaBert St. Clair, American Electric Railway Association, New York.)

"Interesting Facts About the Exhibit" — Edward J. Cooney, Lowell, Mass.

"Membership Campaign Results" —Dana H. Howard, superintendent Advertising Department, Commonwealth Edison Company, Chicago.

"The Association Bulletin"— Donald M. Mackie, advertising manager, Consumers Power Co., Jackson, Mich.

"Employment Opportunities"— Leonard Ormerod, general information manager, Bell Telephone Company, Philadelphia, Pa.

(Second Session)

"Keeping the Organization Abreast of Its Advertising"—P. C. Staples, vice-president, Bell Telephone Company of Pennsylvania.

"Relation of Advertising Agency to Public Utility Advertising"—C. R. Winters, president, Central Advertising Agency, Wichita, Kansas, for the agency.

George Ade Davis, assistant to vice-president and general manager, Oklahoma Gas & Electric Company, Oklahoma City, for the company placing its advertising direct.

(Discussion.)

"The Use of Motion Pictures by Public Utilities" — Marshall E. Sampsell, president, Central Illinois Public Service Company, Chicago.

"Good Will and Institutional Advertising"—J. C. Jordan, Pacific Gas & Electric Co., San Francisco.

George McQuaid, director, Texas Public Utility Information Bureau, Dallas.

B. J. Mullaney, vice-president, Peoples Gas Light & Coke Co., Chicago.

Contracts Awarded

Among the contracts recently taken by the U. G. I. Contracting Company has been that of furnishing a complete steam regenerator system for the Des Moines (Ia.) Gas Company. It has also taken a similar contract from the Consumers Gas Company, Reading, Pa., and the Savannah (Ga.) Gas Company.

The U. G. I. Contracting Co. will design the plant and will furnish and install the apparatus required.

This steam regenerator system is something new and where installed will furnish an exhaust steam supply to the water gas generators and effect a saving of approximately 5 lbs. of boiler fuel per thousand.

Natural Gas Association to Meet

Arrangements have been perfected for the annual convention of the Natural Gas Association of America, to be held, in conjunction with the Natural Gas Supply Men, May 18, 19, 20 and 21, at Atlantic City, N. J.

More than a thousand members of the association and supplymen, according to present indications, will be included in the annual gathering which, this year, has an added importance inasmuch as it is being held near the beginning of a new national administration, under which the country at large has been advised real prosperity will be enjoyed.

Economy has become the watchword of national leaders of thought, of the foremost men in industry, finance and other important businesses, and this interesting subject will come up for considerable thought and discussion at the coming gathering at the seashore.

The Steel Pier, internationally famous as a convention headquarters and meeting place, has been secured by the association for the event in May. All association meetings will be confined to this one place, thus eliminating the necessity of jumping from one spot to another so as not to miss anything, such as has been frequently the case in the past.

The exhibitors are making an effort to make this year's presentation of appliances, tools and other gas apparatus and material excel any of the previous years. Everything from "a needle to an anchor" in the gas business will be displayed.

The officers of the Natural Gas Association of America include: President, John B. Corrin, vice-president and general manager of the Hope Natural Gas Company of Pittsburgh; vice-president, A. W. Leonard, general manager of the Oklahoma Gas Company, Tulsa,

Okla.; secretary-treasurer, William B. Way of Pittsburgh. Fred A. Miller, of the Dresser Manufacturing Company, Bradford, Pa., is president of the Gas Supply Men's organization.

Oklahoma Legislature Passes Permit Bill

The Legislature of the State of Oklahoma has passed a bill known as the revocable permit law, which permits public utility companies engaged in the business of furnishing gas, electricity or water under a municipal franchise, to surrender such franchise at any time before its expiration and receive in lieu thereof a permit from the Corporation Commission of the state. Any permit granted under the provision of this act may be amended or revoked by the State Legislature whenever, in its opinion, it may be injurious to the citizens of the state, but specific provision is made in the bill that no injustice shall be done to the holder of the permit. The law is so drawn that it does not conflict with or limit the right of any municipality to require the holder of a franchise to pay, as a tax on said franchise, a portion of its receipts.

No company may commence the business of furnishing public utility service in any municipality as long as there is in existence a valid franchise or permit authorizing any other company to conduct in such city or town a business similar to that proposed until the Corporation Commission shall issue a certificate of public convenience and necessity therefor.

Laws similar to the one just passed by the Oklahoma Legislature are now in effect in the states of Wisconsin and Arkansas.

Public Service of N. J. Insures All Employees

Newark, N. J.—A group life insurance plan involving a total insurance coverage of between $15,000,000 and $16,000,000, and affording protection to 12,000 men and women workers, has been announced by the Welfare Department of the Public Service Corporation of New Jersey. Subsidiary companies of this organization provide local transportation, electricity and gas to communities throughout a large part of the state of New Jersey. The company furnishing the insurance is the Prudential Insurance Company of America.

All those employees who have been in the service of any of the public service companies for a year or more will be eligible for a minimum policy of $1,000 without physical examination and at an extremely low rate. In addition to the 12,000 now eligible, the benefit will within the next twelve months be automatically extended to 4,000 others who are now of less than one year's employment.

The policy provides for payment in the case of death, and for those of less than 60 years of age in the case of total and permanent disability.

The premium to be paid by employees benefiting is at the rate of 60 cents per month per thousand, to be deducted from salaries and wages. The public services companies pay all premiums in excess of the 60 cents and assume all clerical and other expenses necessary to the administration of the plan.

The taking out of insurance under the plan is not compulsory, but the advantages are so manifest that it is expected that there will be a practically unanimous acceptance of the offer, especially as the policy provides that in the event of any employee leaving the service for any cause he or she may continue the insurance without physical examination at the rate ordinarily charged for persons of his or her attained age.

The plan is now ready for submission to the employees and the work of enrollment will begin as soon as the necessary blanks can be prepared. Each individual taking out insurance will be given a certificate stating the terms of his insurance.

The group insurance is in addition to the other benefits which employees receive under the Public Service Welfare Plan, which provides death benefits, sick benefits and a system of pensions.

S. P. Cobb Succeeds R. H. Burdick

Announcement has been made of the appointment of Mr. S. P. Cobb as gas engineer of the Electric Bond and Share Company of New York, to succeed Mr. R. H. Burdick. Mr. Cobb has been with the Electric Bond and Share Company for the past eight years as assistant gas engineer and this announcement will prove of interest to his many friends in the gas industry.

Fall River Gas Company Issues the House Organ

The Fall River Gas Works Company has just issued the first number of the house organ for the month of February, 1925. It is a small sheet, only eight pages, but is full of information regarding the company and various activities. We wish to take this opportunity of congratulating the company upon its enterprise in getting out such a publication.

Of interest in this first issue of the paper is a discussion of the salient factors in the growth of the company during the past year.

The paper is yet without a name, and suggestions are invited from all on a suitable, catchy name for the publication.

Hudson Valley Coke & Products Corp. Incorporated

Albany, N. Y.—Hudson Valley Coke & Products Corporation, Troy, N. Y., through White & Case, attorneys, 14 Wall street, New York City, which company is erecting one of the largest wholesale gas plants in the United States, today filed a certificate in the office of the Secretary of State increasing its number of shares of common stock non par value from 150,000 to 165,000, with 50,000 shares preferred stock $100 par value same as heretofore.

Sale of Gas Stock to Customers and Employees in Massachusetts

Acting under the provisions of Chapter 172 of the Acts of 1924, permitting gas and electric companies to offer new issues of stock to their customers and employees, provided same doos not exceed 4 per cent of the existing capital and upon such terms and subject to such conditions as may be approved by the Department of Public Utilities, the Cambridge Gas Light Company recently applied for, and were authorized to issue 2,200 shares of new stock for that purpose at $55 per share, payment to be made in full or by instalments. No one person to be allotted more than five shares and purchasers to agree not to transfer the stock for three years, and the company agreeing to redeem the stock during that period, without loss to the purchaser.

The entire issue was taken up in 33 days after it was put on the market, 134 employees subscribing for 462 shares and 380 customers subscribing for 1,738 shares. Of the employees, 74 paid in full, or 291 shares and 60 subscribed for 171 shares on the instalment plan. Of the customer purchasers 298 paid in full, or 1,462 shares, and 82 subscribed for 276 shares on the instalment plan, making a total of 1,753 shares paid in full and 447 taken on the instalment plan. The Cambridge company is the pioneer in customer ownership sales in Massachusetts and the issue met with such a prompt and gratifying reception that the company feels entirely satisfied with the experiment and is encouraged to hope that further issues of its stock may also be profitably placed.

Pass Gas Franchise

Wood River, Ill. — The Wood River City Council has passed an ordinance granting a franchise to the Illinois Power & Light Corporation for furnishing gas to Wood River by piping it from Edwardsville and back through Hartford to Granite City. The company was given 20 days for acceptance. A large gas container to hold 150,000 cubic feet of gas is to be built in Wood River.

More Gas Used Through Smoke Abatement Drive

St. Louis, Mo.—St. Louis' growing interest in smoke abatement has increased the consumption of gas here, stockholders of the Laclede Gas Light Company were told at their annual meeting. This has been reflected in the demand from both industrial plants and householders, according to Charles A. Munroe, chairman of the board.

Directors were re-elected as follows:

C. L. Holman, C. Drummond Jones, Geo. B. Evans, W. H. Whitton, Edw. L. White, Wm. S. Dodd, Edward A. Faust and Birch O. Mahaffey of St. Louis; Charles A. Munroe, W. A. Blind and Arthur Cable of Chicago; Philip G. Gossler of New York and H. B. Rust of Pittsburg.

Gas Co. to Give Its Employees Insurance Policies

El Monte, Calif.—More than 50 employees of the local Southern Counties Gas Company in the Monravia district, comprising Monrovia, Duarte, Arcadia, Sierra Madre, South Santa Anita, El Monte and contiguous territory, will be given Christmas presents this year in the form of life insurance policies. The policies are issued by the Connecticut General Life Insurance Company of Hartford, Conn., and call for the payment of insurance in the sum of $1,000 in case of the death of an employee holding such a policy.

W. E. Keefe, Monrovia district superintendent for the local utility, explained that such policies are given to all employees of the Southern Counties Gas Company after six months' service with the company. He said that it was the company's desire to remember all of its employees each Christmas and an insurance policy fully paid for one year was the finest and most practical gift the company could offer its employees for their loyal service.

Course in Economics of Public Utilities Offered by University of Illinois

The University of Illinois, through its College of Commerce and Business Administration, offers its students a knowledge of the fundamental economic principles underlying the public utility business. No attempt is made to train students for particular positions in the utility field; specialization is not carried that far. The university does, however, endeavor to lay a foundation on which successful careers in managerial and administrative positions may be built.

Principles of Public Utilities—This is the introductory, or foundation, course intended to give a broad general knowledge of the field. Although planned primarily for students specializing in public utilities, this course is open to other properly qualified students. It covers the history of electric, gas, telephone and electric railway utilities; the economic peculiarities of these industries; their relationship to the community and to each other; valuation and rates; service requirements; financial requirements; customer ownership and public relations; and regulation.

Sale of Gas Co. Stock Increases

Norwich, Conn.—As a result of the presidential election, the sales of the securities of the gas companies of Connecticut have been stimulated to a great degree during the past month. The purchase of gas company stocks has gone up in a steady, even movement which began immediately after the election. Unlike many of the other stocks, the gas securities have been subject neither to "Booming" nor to sensational soaring. Moreover, the gas stocks have ascended at an even rate over the whole period.

The major part of the purchasing, according to financial observers, has been done by wealthy individuals who have funds available for investment in good yielding but solid securities. Hardly any of the buying was done for the inside interests.